(12) UK Patent Application (19) GB (11) 2 101 225 A

(21) Application No 8218095
(22) Date of filing 22 Jun 1982
(30) Priority data
(31) 8119686
8124747
(32) 25 Jun 1981
13 Aug 1981
(33) United Kingdom (GB)
(43) Application published
12 Jan 1983
(51) INT CL³
F17C 1/16
(52) Domestic classification
F1R 3A3A 3A3C 3BX2
(56) Documents cited
GB 1417004
GB 1045891
GB 1031181
"Principles of Aerosol Technology" (by P. A. Sanders-Plastic container section)
(58) Field of search
F1R

(71) Applicants
Metal Box plc
(Great Britain),
Queens House, Forbury Road, Reading RG1 3JH, Berkshire
(72) Inventors
Francis John Lovell,
Douglas James Algar,
Peter William Sevenoaks
(74) Agents
Saunders and Dolleymore,
2 Norfolk Road,
Rickmansworth, Herts.
WD3 1JH

(54) Containers for pressurised liquids

(57) A container for dispensing pressurised liquid through a valve (4) comprises a vessel (2) of a pressure-containing plastics material such as polyethylene terephthalate. The valve may be mounted via a closure (10) or directly in the mouth of the vessel. An actuator (8) is coupled with the valve to dispense the liquid.

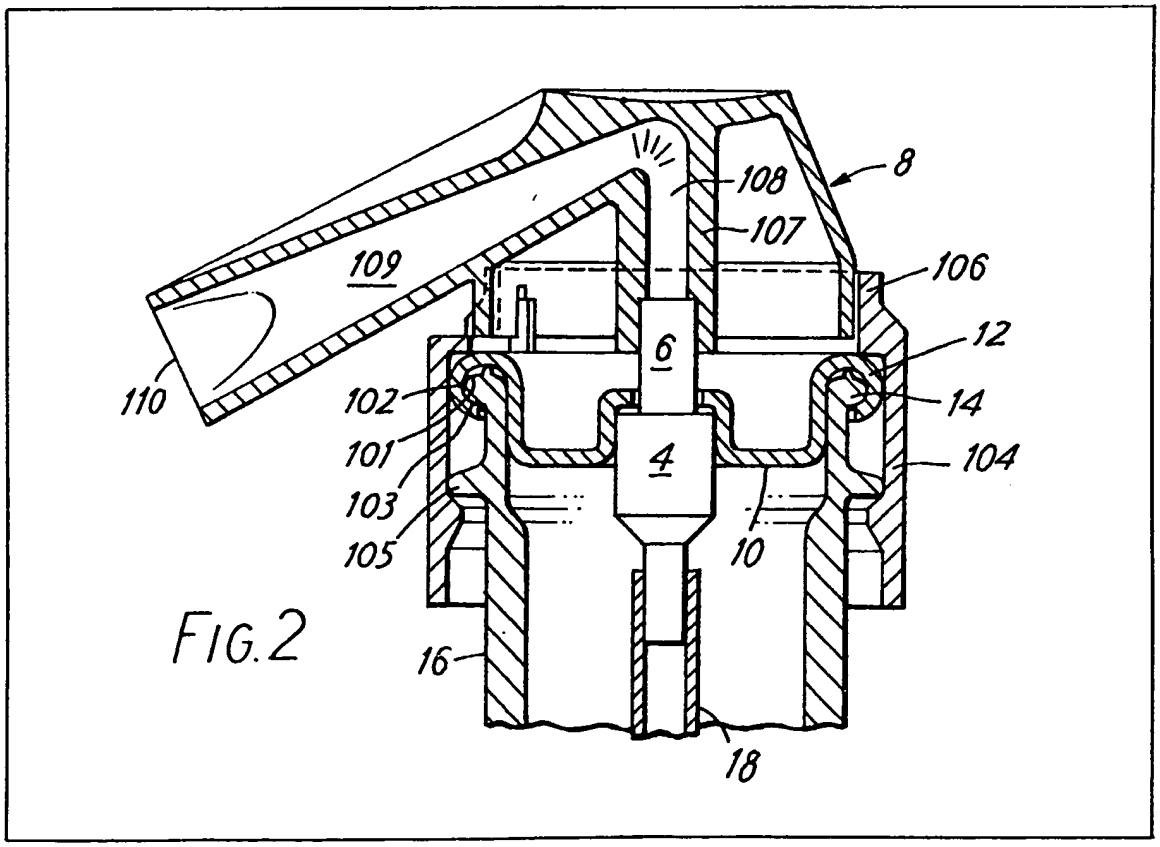

FIG. 2

GB 2 101 225 A

The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.

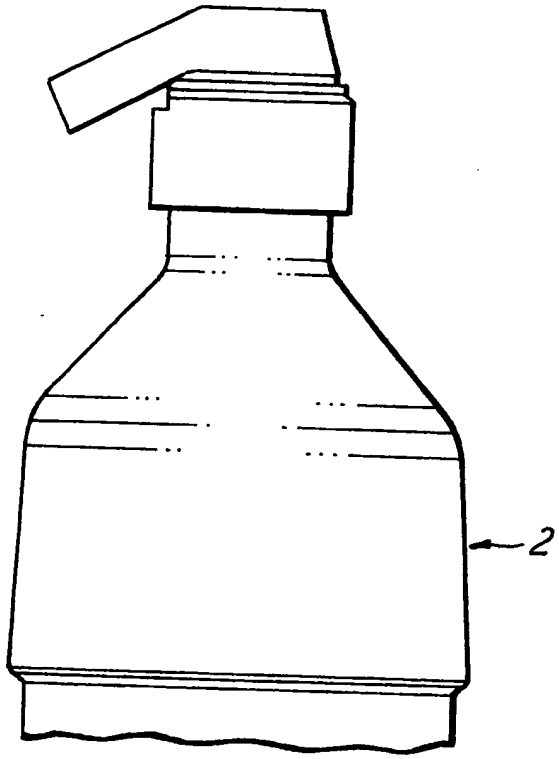

FIG. 1

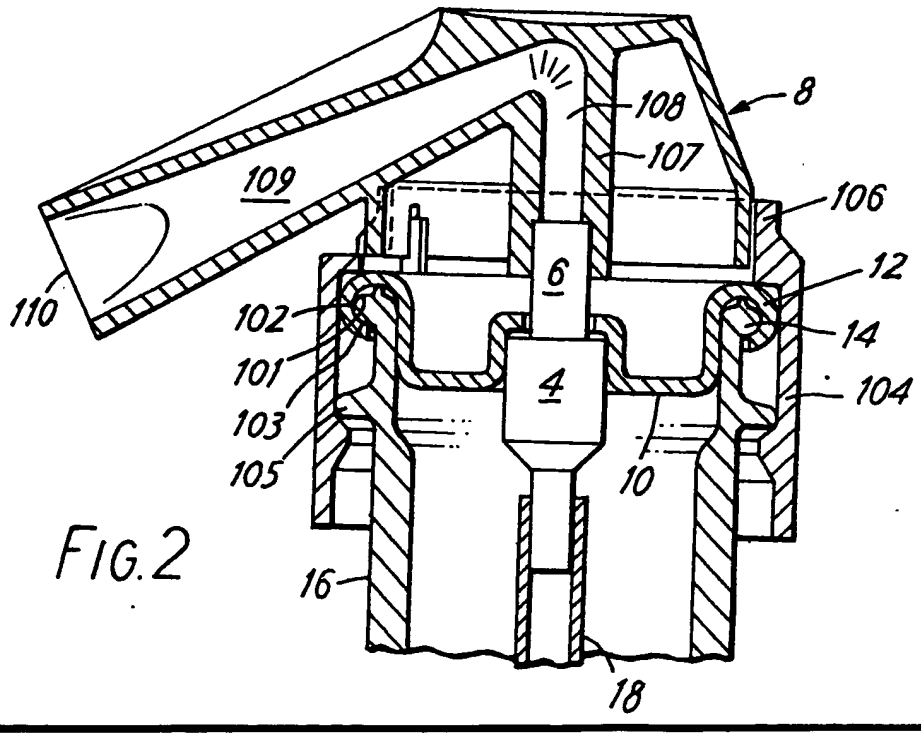

FIG. 2

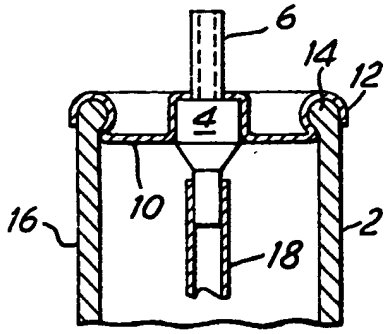

FIG. 3

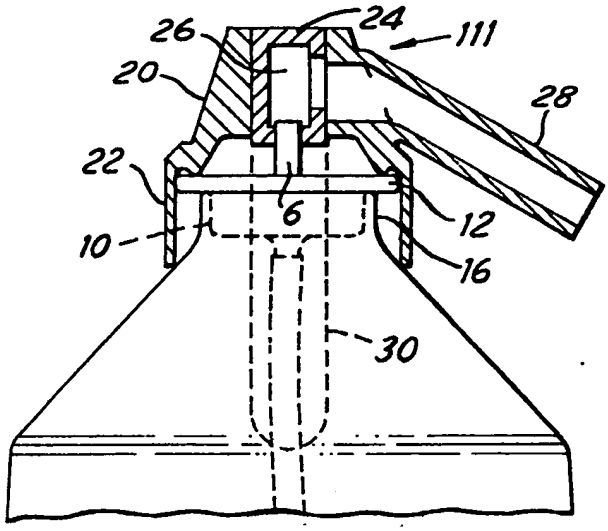

FIG. 4

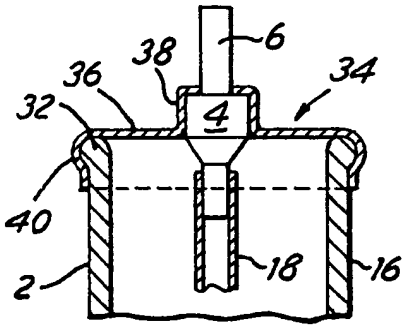

FIG. 5

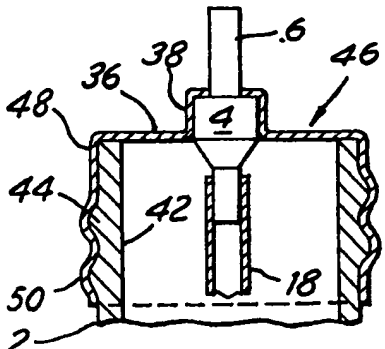

FIG. 6

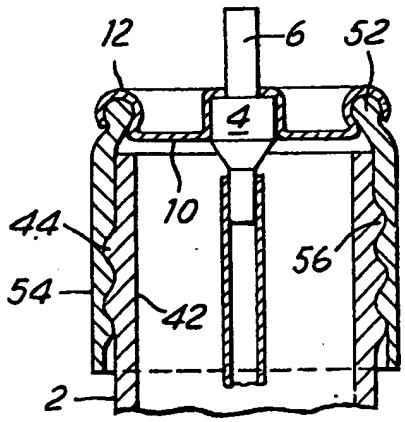

FIG. 7

2101225

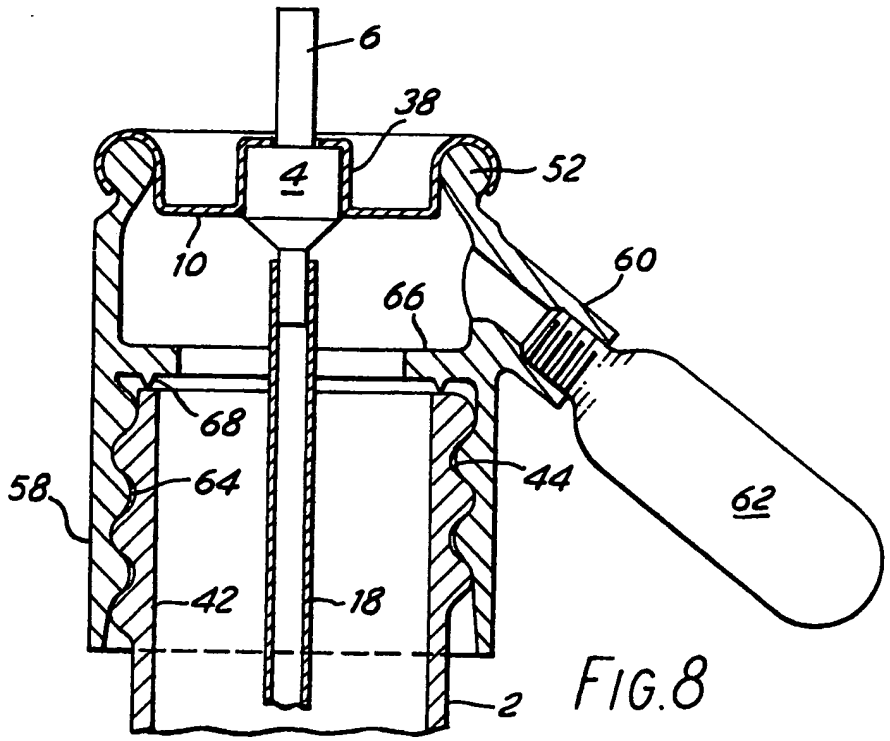

FIG.8

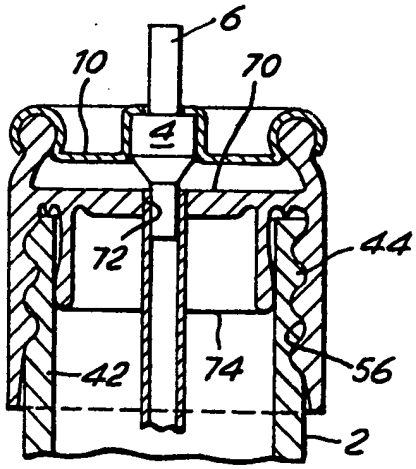

FIG.9

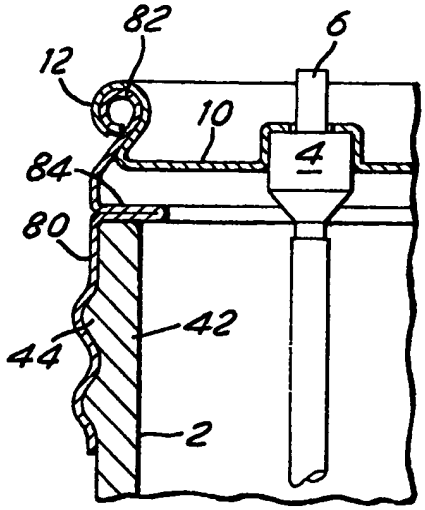

FIG.10

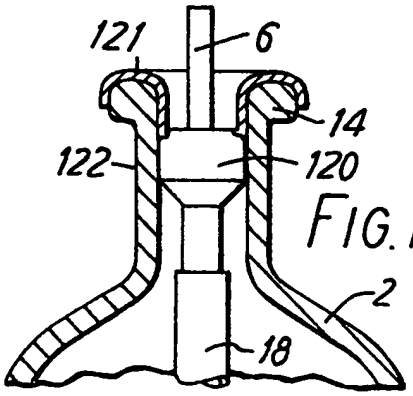

FIG.11

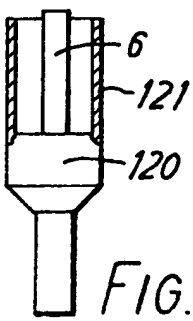

FIG.12

SPECIFICATION

Containers for pressurised liquids

This invention relates to containers for dispensing pressurised liquids.

Such containers take many forms, but this application is concerned with those which are intended for high-quantity production, for eventual use by the general public to dispense such products as carbonated beverages, soda water, garden insecticides, weed killers, paint, fire extinguishing fluids, disinfectant sprays, etc.

One object of the invention is to provide a container for dispensing pressurised fluids which is suitable for "one-trip" use, being disposable when once emptied (for recycling if necessary), but which is at the same time light in weight, relatively inexpensive, mechanically strong and difficult to break; which can also, if desired, have the advantage of being translucent so that it is possible to see at any given time how much of the contents remain in the container; and which can be made economically in large sizes such as, for example, of one or two litre capacity.

Some of the above-mentioned features are present in, for example, a conventional aerosol-dispensing can. A disadvantage of such a can is that some of the already limited space within the can is occupied by a propellant fluid which is provided in order to propel the remainder of the contents of the can, viz. the product to be used, into the atmosphere in the form of an aerosol.

A very different kind of conventional container for dispensing pressurised fluids consists of a soda syphon. Soda syphons are an example of a re-usable container; and whilst the familiar glass syphon is transparent, and therefore offers the user an opportunity to see when it is empty or nearly so, it is both heavy in weight and (being re-usable so that both the glass container and its dispensing head must be made strong enough to withstand repeated fillings, emptyings and journeys) quite expensive.

Yet another kind of container for dispensing pressurized liquids, in the form of a jet, this being one which can be made in quite large sizes, is a disposable metal beer can when fitted with a re-usable beer pump of the kind which can be purchased for use particularly at large social gatherings. These pumps are relatively expensive.

According to the present invention, a container for dispensing pressurised liquids comprises: a vessel made of synthetic plastics material selected from polyethylene terephthalate, biaxially-oriented polyvinyl chloride and the polyacronitriles and being such as to enable a pressure greater than atmospheric to be maintained within the vessel when the vessel is closed; a dispensing valve mounted sealably in the mouth of the vessel, and actuating means coupled with the valve for operating the valve to release pressurised liquid product from the container.

The valve is preferrably an aerosol-type valve having a protruding valve stem, the actuating means being attached to the valve stem. Although the valve may be mounted directly in the vessel mouth, it is preferably carried by a closure member, and is mounted in the mouth by virtue of the closure member being securedly sealably over the vessel mouth.

The valve or closure member may be secured directly and non-removably to the vessel, in which case it is preferably deformed or upset into sealing and securing engagement with the vessel. Preferably also the mouth has a circumferential terminal bead which may be internal or which may project generally radially outwards. In the former case, a peripheral portion of the closure member is preferably secured over the bead by crimping. In the latter case, there may or may not be a said closure member, and a peripheral portion of the valve or closure member (as the case may be) is preferably swaged or rolled into engagement over the bead.

Instead of providing an external or internal circumferential bead about the vessel mouth, it is possible to use a vessel having a neck with a standard external screw thread. If the closure member is secured directly and non-removably to such a vessel, the closure member has an externally-depending skirt sufficiently long to cover the screw thread, and is rolled or swaged into intimate sealing engagement with the outside of the neck over the screw thread. In this last arrangement, the forces applied to the skirt of the closure member are preferably greater than in the conventional operation of applying by mechanical means an ordinary removable screw cap to a bottle, so that the skirt of the closure member is in sufficient tension to render it difficult or impossible to remove from the vessel. This is desirable because of the pressure inside the vessel in use, to prevent sudden discharge of the contents in the event of attempts to tamper with the closure member or the valve.

Instead of being secured directly to the vessel, however, the valve or the closure member may be secured to it sealably by means of an intermediate member in the form of a sleeve-like adaptor member which is sealably secured to both the closure member and the vessel. Whilst the adaptor member may be of metal, it is preferred that it be made of plastics material by injection moulding. The adaptor member may have around its upper extremity a circumferential bead to which the closure member is attached by crimping, in the same manner as is mentioned above in connection with the direct attachment of the clousre member to a vessel having an internal circumferential terminal bead.

Use of an adaptor member can also enable the preferred crimping method to be used for securing the closure member itself, whilst still permitting the vessel to be the kind having an external screw thread.

Thus, in a preferred embodiment of the arrangement that includes an adaptor member, the latter has an internal screw thread secured to the vessel by engagement with the circumferential screw thread of the latter.

Engagement of the adaptor member with the vessel must be such as to provide an effective seal against escape of pressure from within the vessel (otherwise than through the valve when the actuating means is operated to open it). Where there are provided co-operating screw threads as mentioned above, the seal may be provided entirely by intimate engagement between the two screw threads, these being so dimensioned as to cause the vessel neck within the sleeve-like adaptor member to be in sufficient compression for this purpose. However, the adaptor member may be made so that it is removable from the vessel, and in this case it may be necessary to provide sealing means independent of the co-operating screw threads. Such independent sealing means may also, of course, be provided as an additional precaution even if there is sealing engagement between the screw threads, especially in the case where the adaptor member is not intended to be removable.

Accordingly, the adaptor member may be provided with sealing means for sealably engaging a surface or surfaces of the vessel whereby to provent a path for escape of pressure from within the bottle to the inter-engaging screw threads of the vessel and adaptor member. Such sealing means may for example comprise a circumferential fin compressibly engaging the terminal end surface of the vessel, or a plug portion engaging within the vessel mouth. The sealing means in the form of a fin or plug, or both, is preferably an integral part of the adaptor member. It depends from a portion of the latter extending generally radially inwardly of the sleeve-like wall of the member.

The liquid can be fully or partly pressurised before being introduced into the vessel. It may be introduced before or after the valve (and closure member, if provided) are fitted; if the liquid is not pre-pressurised, gas under pressure, for example carbon dioxide gas, is subsequently forced into the container. This may be done in the fillers' factory, by introduction of the gas at a predetermined rate (and preferably with agitation) through the valve into the liquid.

Alternatively, gassing may be performed by the eventual consumer. For this purpose, the container preferably has an adaptor member as discussed above, and in this case the adaptor includes inlet means for attachment thereto of an external source of pressurised gas, for introduction of such gas into the vessel. This external source of pressurised gas is preferably a disposable bulb of the kind commonly available for pressurising re-usable soda syphons.

If the liquid is introduced in a pre-pressurised condition into the vessel before the closure member has been fitted, then, after the latter has been fitted, the pressure of the liquid may be increased, or restored to its required value, by a charge of gas introduced by the filler through the valve. Such a "top-up" charge may also be introduced in the case where the vessel is filled with pressurised liquid through the valve, the latter and the closure member having previously been fitted to the vessel.

In the case where an adaptor has means for attachment of an external pressure source by the consumer, the adaptor sleeve will usually be lengthened and therefore more flexible, thus tending to render effective sealing between itself and the vessel more difficult. The adaptor may accordingly include stiffening means such as to ensure that the portion having a screw thread retains its circular cross-section and that effective sealing will be maintained. Such stiffening means, if provided, preferably extends radially inwardly so as to overlie the bottle mouth. Then, if sealing means are provided as mentioned above (such as a fin or plug portion), this sealing means is most conveniently formed on the stiffening portion, preferably as an integral part of the latter.

The actuating means may be of any suitable kind for the particular application envisaged for the container. Where the pressurised liquid is to be dispensed in the form of a jet, the actuating means preferably comprises a body member having an internal dispensing passage and means for connecting the passage with the dispensing valve, the passage being, in at least a downstream portion thereof, of gradually divergent cross-section towards its outlet end.

The products to be dispensed may be any substance which can be dispensed in the form of a spray or jet of liquid through an aerosol-type valve and which is chemically inert to the material of the vessel. The materials of the other components are of course also selected so as not to react chemically with the product. Examples of suitable products have already been mentioned at the beginning of this description.

In cases where the product is pre-pressurised, i.e. introduced into the vessel under pressure, it contains a dissolved gas such as to act as a propellant when the dispensing valve is opened by operation of the actuating device. The choice of propellant gas is determined by the nature of the product. Preferably it is an innocuous gas such as carbon dioxide, particularly if the product is intended for human consumption.

Various embodiments of the invention will now be described, by way of example only, with reference to the drawings of this application, in which:—

Figure 1 is a side elevation of part of a container for dispensing a pressurised liquid, in the form of soda water, in a first embodiment of the invention;

Figure 2 is an enlarged sectional elevation of the upper part of the container shown in Figure 1;

Figure 3 is a section elevation of the top of a container with the actuating means removed, in a second embodiment;

Figure 4 is a side elevation of the container of Figure 3, with the actuator means attached and shown in section;

Figure 5 is a view similar to Figure 3 but illustrates a third embodiment;

Figure 6 is another view similar to Figure 3, but

illustrates a fourth embodiment;

Figure 7 is a further view similar to Figure 3, but illustrates a fifth mbodiment which includ s an adaptor member;

Figure 8 is a view similar to Figure 7 but illustrates a sixth embodiment in which the adaptor member is modified to permit pressurisation to be performed by the consumer;

Figure 9 is another view similar to Figure 7 and shows a seventh embodiment;

Figure 10 is a further view similar to Figure 8, showing an eighth embodiment of the invention;

Figure 11 is a part-sectional elevation of the top of a container with the actuating means removed, in a ninth embodiment; and

Figure 12 is a similar view showing only a valve of the container of Figure 11, before attachment.

Referring to Figures 1 and 2, the container shown therein is adapted for use as a soda syphon, and includes a vessel in the form of a bottle 2, made of polyethylene terephthalate (PET), an aerosol-type dispensing valve 4 having an upstanding valve stem 6, and actuating means in the form of a dispensing head 8 attached over the valve stem 6. The dispensing valve 4 is mounted in a closure member, in the form of a metal valve cup 10, which is secured sealably over the mouth of the bottle by close sealing engagement of an outer circumferential curl portion 12 of the cup over a generally-internal circumferential bead 14, formed integrally at the extremity of the neck 16 of the bottle about the open mouth of the latter. From the lower end of the dispensing valve 4 there depends a dip tube 18, which extends substantially to the bottom of the bottle.

The bead 14 is of any suitable form, but in this example it has the preferred form shown in Figure 2, in which it has a terminal surface 101 comprising an upstanding fin with gently-sloping surface portions to either side of it; a generally-cylindrical radially-outer surface 102; and an annular lower surface 103. Spaced axially of the bottle neck 16, below the terminal bead 14, is a radial lip 105. A shroud 104, of injection-moulded plastics material, is retained around the neck 16 by an inward radial projection of the shroud engaging behind the lip 105, and by a cylindrical upper portion 106 of the shroud which engages upon the curl portion 12 of the valve cup.

The dispensing head 8 is in the form of a one-piece actuator moulded from plastics material and having its lower edge within the upper portion 106 of the shroud. The head 8 has a central core 107 which is hollow by virtue of a dispensing passage 108 whereby the actuator fits upon the valve stem 6. The passage 108 is continued in a long downstream passage porton 109, of gradually-increasing circular cross-section and t rminating in an outlet 110 which is of generally rectangular cross-section. In this example, the cross section of the passage portion 109 is frusto-conical, having an apex angle of approximately 4 degrees.

In assembly of the contain r shown in Figures 1 and 2, the valv 4 is secured to the valv cup 10 and the dip tube is fitted, so forming a cover assembly. The valve cup is then secured to the bottle by crimping the peripheral curl 12 over, and into close locking engagement with, the bottle bead 14 is that the curl 12 also covers the terminal end of the bottle.

Figures 3 and 4 show an alternative arrangement to that just described. In this second embodiment, the valve cut 10, carrying the aerosol-type dispensing valve 4 with its up-standing hollow stem 6 and dip-tube 18, again has a peripheral curl 12 crimped over a terminal bead 14 of the neck 16 of a vessel 2 in the form (in this example) of a bottle made of polyethylene terephthalate. In this case, however, the bead 14 is of generally-circular cross-section, and the dispensing head 111, is in the form of an actuator comprising an injection-moulded hollow body portion 20 of plastics material having a skirt 22 which fits around the periphery of the valve cut 10 to locate the actuator 111 on the bottle, and an operating member 24 having a dispensing chamber 26. The chamber 26 communicates with the interior of the valve stem 6 and with an outlet tube 28 formed as an integral part of the actuator body 20 and of gradually-divergent, frusto-conical form. The operating member 24 has an integral side handle 30 and is so arranged that depression of the handle 30 against a return spring (not shown), in the manner customary in conventional soda syphons, also depresses the operating member 24 so as to open the valve 4 and so release a shot of the contents of the bottle 2 through the tube 28.

The actuator 111 will not be further described. It will be understood that in this first embodiment, and in each embodiment of the invention hereinafter to be described, the actuating means may take the form of either of the actuators 8 or 111, or any other suitable form. The actuating means is applied to the remainder of the container after assembly of the latter has been completed, and usually after the vessel has been filled with its contents.

In the embodiment shown in Figure 5, the container is the same as that just described, except that the terminal circumferential bead, 32, of the bottle 2 is directed outwardly of the bottle neck rather than inwardly; whilst the valve cup, which is shown at 34, is of a different cross-sectional shape and is secured to the bottle by rolling or swaging, using an external roller tool not shown, instead of crimping. The valve cut 34 has a generally-flat panel portion 36 surrounding the valve-carrying central pocket portion 38, the outer peripheral part 40 of the flat portion 36 being deformed by the rolling or swaging operation to grip the bead 32 closely. Thus the deformed part 40 is not in the form of a curl (such as the curl 12 of Figures 2 and 3) xtending upwardly and outwardly from the flat panel portion 36.

Referring to Figure 6, the neck 42 of the PET bottle has an xternal screw thread 44. The valv - carrying closure m mber 46, is similar to the

corresponding member 34 seen in Figure 5, but is initially of larger radius so as to provide sufficient material to enable the flat portion of the member, when deformed by rolling or swaging in generally the same manner as the member 34, to conform closely with, and overlie, the screw thread 44. Thus, the member 46 has a skirt 48 formed with a crew thread 50, which does however make an interference fit with the thread 44 so that the member 46 is not readily removable from the bottle.

The three embodiments shown in Figures 7 to 9 all employ a PET bottle having a screw thread 44 as in Figure 6; but, in contrast to the four embodiments described with reference to Figures 1 to 6, the valve cups 10, instead of being secured direct to the bottle, are secured sealably to a sleeve-like adaptor member which is sealably secured around the bottle mouth.

In Figure 7, the valve cup 10, which is of the same form as that shown in Figure 3, is secured in the same manner, viz. by crimping, to a circumferential terminal bead 52 of a one-piece, injection-moulded, sleeve-like adaptor 54 of plastics material. The adaptor 54 has an internal screw thread 56 which engages the bottle screw thread 44. The method of assembly is that the dispensing valve 4 is again secured to the valve cup (by crimping the valve pocket 38); the valve cup is crimped on to the bead 52; and the adaptor, with the dip tube 18 attached to the valve, is applied to the bottle mechanically, to produce an interference fit between the adaptor and the bottle neck, so effecting sealing and ensuring that the adaptor is not readily removable.

In respect of all the embodiments so far described, the bottle 2 is filled with water which has been pre-pressurised by addition of carbon dioxide, the water being introduced into the bottle under pressure before the cover assembly of valve cup 10, valve 4 and dip tube 18 (and adaptor 54 in the embodiment of Figure 7) is secured to the bottle, this latter operation being carried out whilst the bottle is in the same pressurised atmosphere in which it has been filled. Additional carbon dioxide gas under pressure may then, if required, be introduced to the water through the valve 4, the latter in that case being of a kind suitable for this to be done.

Alternatively, the cover assembly 4, 10, 18 may be secured to the bottle, with the adaptor 54 if provided, whilst the bottle is empty, liquid under pressure being introduced into the bottle through the valve. When the bottle is full, further gas may again be introduced through the valve 4, if an increase in internal pressure is required.

A further alternative filling method consists in filling the bottle with unpressurised water before applying the cover assembly; and then gassing the water slowly through the valve 4, preferably whilst continuously agitating the bottle to assist solution of the gas into the water.

All of the filling methods described above presuppose that the container leaves the filling plant charged with pressurised liquid. It may be sold, so charged, to the consumer, with or without a suitable actuating or dispensing head such as the head 8 or 111 described with reference to Figures 2 to 4. The container, when empty, is then disposed of without removal of the cover assembly, preferably for recycling of such of the materials thereof as may be practicable.

Alternatively, however, the bottle 2 can be supplied to the consumer either empty or with the liquid product contained in it and closed by either an ordinary screw cap (not shown in the drawings) or by a removable and replaceable cover assembly adapted to enable the consumer to pressurise liquid in the bottle before use. One example of such a cover assembly is shown in Figure 8. It is basically similar to that described with reference to Figure 7, but with the following differences. The adaptor, 58, is longer than the adaptor 54 of Figure 7, and incorporates, below the valve cup 10, inlet means in the form of a screw-threaded, integral boss 60, to which a conventional small bulb 62 of carbon dioxide or other innocuous pressurised gas can be fitted so as to charge the liquid in the bottle with the gas. The boss 60 may be provided with a non-return valve (not shown) to enable the bulb 62 to be removed after being used and before the contents of the bottle are dispensed.

To permit easy removal of the cover assembly from the bottle 2, the screw thread 64 of the adaptor is in this case such that there is either no interference fit between itself and the bottle thread 44, or minimal interference. Additional or alternative sealing means may accordingly be provided, and also, if required, means for effecting transverse stiffening of the adaptor. An example of such a stiffening means is an integral annular portion 66, a Figure 8, overlying the end of the bottle 2 and carrying an annular, integral fin 68 which provides the additional or alternative sealing by pressing compressibly against the annular end surface of the bottle when the adaptor is fully tightened on to the latter, and so sealing the screw threads 44, 64 from the interior of the bottle.

Referring to Figure 9, this shows the adaptor 54 of Figure 7 but modified by the addition of an integral stiffening wall 70, of greater radius than the annular portion 66 and having a central hole 72 through which the dip tube 18 extends. Such a stiffening wall may of course be provided in the adaptor 58 of Figure 8. The annular stiffening portion 66 or 70 may carry an integral plug portion 74 which fits within the bottle mouth to provide a seal between the interior of the bottle and the screw threads.

The adaptor, if provided, need not be of a plastics material, but may for example be of metal. Thus Figure 10 shows a sleeve-like metal adaptor 80 having a terminal, circumferential curl 82 to which the valve cup 10 is crimped, in place of the bead 52 of the plastics adaptor shown in Figure 7. The adaptor 80 is secured to the bottle by rolling or swaging, in generally the same manner as described above with reference to the closure

member 34 of Figure 5. The adaptor 80 also has an optional, inwardly-directed annular portion 84 formed by flattening part of the cylindrical side wall of the adaptor. The annular portion overlies the end surface of th bottle so as to provide both additional sealing and stiffening of the adaptor.

Any other synthetic plastics material can be used, in place of PET, for the vessel such as bottle 2, in any embodiment of the invention provided it is capable of holding substances under pressure greater than atmospheric. Examples include biaxially oriented polyvinyl chloride (PVC) and various polyacrylonitriles.

It is to be understood that the vessel need not be in the form of a bottle but can be in any form suitable for the particular application required. Thus it may for example be of a shape similar to a metal can, having no substantial reduction in diameter below the top such as to define a neck above the diameter reduction. Another example is a spherical vessel.

The use of a dip tube is optional where the vessel is to be upended in use so that the end having the valve is at the bottom.

The valve-carrying closure member may, instead of being secured to the vessel by the methods mentioned above, be secured by heat-sealing, either by application of direct heat or (where the closure member is of metal) by use of high-frequency electrical radiation in a manner known in connection with the sealing of foil diaphragms to plastics containers. Alternatively, where the mouth of the vessel is of appropriately small diameter so that the dispensing valve itself fits closely within it, the valve may be secured in the mouth without the use of a valve cup or other closure member. In such a case, the valve may be secured by heat-sealing or by cementing using a suitable adhesive. The valve itself may have a body of plastics material or of metal. In either case the valve body may (as an alternative, or in addition to, heat-sealing or cementing) have a suitable integral peripheral flange which may be upset or deformed around the vessel mouth to obtain the necessary sealing attachment to the vessel.

One example of an arrangement in which a separate closure member is absent is illustrated in Figures 11 and 12, wherein the vessel 2 has a narrow neck 122 in which the dispensing valve, 120 is secured by means of a conventional heat-sealing technique. In this example, also, the valve has a moulded plastics body which extends upwards in a cylindrical extension 121, Figure 12. This extension 121 is upset over the external terminal bead 14 of the neck 122 by means of a suitable upsetting tool under the influence of the heat which also effects heat sealing between the body of the valve and the bore of the neck.

It will be understood that the dispensing valve may indeed be of any suitable kind, as an alternative to the aerosol-type valves which are employed in the particular embodiments of the invention described with reference to the drawings.

CLAIMS

1. A container for dispensing pressurised liquids, comprising: a vessel made of synthetic plastics material selected from polyethylene ter phthalat , biaxially-oriented polyvinyl chloride and the polyacronitriles and being such as to enable a pressure greater than atmospheric to be maintained within the vessel when the vessel is closed; a dispensing valve mounted sealably in the mouth of the vessel, and actuating means coupled with the valve for operating the valve to release pressurised liquid product from the container.

2. A container according to Claim 1, wherein the dispensing valve is an aerosol-type valve having a protruding valve stem, the actuating means being attached to the valve stem.

3. A container according to Claim 1 or Claim 2, wherein the dispensing valve is carried by a closure member, and is mounted in the mouth by virtue of the closure member being secured sealably over the vessel mouth.

4. A container according to any one of the preceding claims, wherein the valve or the closure member is secured directly and substantially non-removably to the vessel.

5. A container according to Claim 4, wherein the valve of the closure member is deformed or upset into sealing and securing engagement with the vessel.

6. A container according to Claim 4 or Claim 5, wherein the vessel mouth has a circumferential terminal bead, the valve or the closure member being secured in close locking engagement around the bead.

7. A container according to Claim 5 when dependent on Claim 3, wherein the vessel mouth has a circumferential, generally-internal terminal bead over which a peripheral portion of the closure member is crimped.

8. A container according to Claim 5, wherein the vessel mouth has a circumferential terminal bead projecting generally radially outwards, a peripheral portion of the valve or closure member being swaged or rolled into engagement over the bead.

9. A container according to Claim 3, wherein the vessel has a circumferential screw thread behind its mouth, the closure member having a skirt secured closely to the vessel by the screw thread.

10. A container according to any one of Claims 1 to 3, wherein the valve or the closure member is secured sealably to a sleeve-like adaptor member, the adaptor member being secured sealably around the mouth of the vessel.

11. A container according to Claim 10, wherein the vessel has a circumferential screw thread behind the vessel mouth, the adaptor member being attached to the vessel by engagement around the screw thread.

12. A container according to Claim 10 or Claim 11, wherein the adaptor member has around its upper extremity a circumferential bead, the valve or the closure member being secured in close locking engagement around the bead of the

adaptor member.

13. A container according to Claim 12, when dependent n Claim 3, wherein the closure member is crimped over the bead of the adaptor member.

14. A container according to Claim 11, or to either one of Claims 12 and 13 when dependent on Claim 11, wherein the adaptor member is of injection-moulded plastics material having an internal screw thread secured removably around the circumferential screw thread of the vessel.

15. A container according to Claim 14, wherein the adaptor member is provided with sealing means for sealably engaging a surface or surfaces of the vessel whereby to prevent a path for escape or pressure from within the vessel to the inter-engaging screw threads of the vessel and adaptor member.

16. A container according to Claim 15, wherein the said sealing means comprises a circumferential fin compressibly engaging a terminal surface of the vessel.

17. A container according to Claim 15 or Claim 16, wherein the said sealing means comprises a plug portion engaging within the vessel mouth.

18. A container according to any one of Claims 11 to 14, having a transversely-extending stiffening portion extending radially inwardly so as to overlie the vessel.

19. A container according to any one of Claims 15 to 17, having a transversely-extending stiffening portion extending radially inwardly so as to overlie the vessel mouth, the sealing means being integral with the stiffening portion.

20. A container according to any ne f Claims 10 t 15, wherein the adapt r member includes inlet m ans for attachment thereto f an external source of pressurised gas for introducti n of such gas into the vessel.

21. A container according to any one of the preceding claims, wherein the actuating means comprises a body member having an internal dispensing passage and means for connecting the passage with the dispensing valve, the passage being, in at least a downstream portion thereof, of gradually divergent cross-section towards its outlet end.

22. A container according to any one of the preceding claims, wherein the vessel is in the form of a bottle having a neck terminating in the said mouth.

23. A container for dispensing pressurised liquids, constructred, arranged and adapted to operate substantially as hereinbefore described with reference to, and as illustrated in, Figures 1 and 2 of the drawings hereof.

24. A container for dispensing pressurised liquids, constructed, arranged and adapted to operate substantially as hereinbefore described with reference to, and as illustrated in, Figures 3 and 4 of the drawings hereof.

25. A container for dispensing pressurised liquids, constructed, arranged and adapted to operate substantially as hereinbefore described with reference to, and as illustrated in, any one of Figures 5 to 10 of the drawings hereof.

Printed for Her Majesty's Stationery Office by the Courier Press, Leamington Spa, 1983. Published by the Patent Office 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.